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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/629,444

07/29/2003

Paul S. Danielson

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CORNING INCORPORATED

SP-TI-3-1

CORNING, NY 14831

EXAMINER

YU, MELANIE J

ART UNIT

PAPER NUMBER

1641

DATE MAILED: 07/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/629,444

Applicant(s)

DANIELSON ET AL.

Examiner

Melanie Yu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5 and 7-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5 and 7-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 January 2006 has been entered.

### ***Withdrawn Rejections***

2. Previous rejections under 35 USC 112, first and second paragraph, 35 USC 102(e) and 35 USC 103(a) have been withdrawn in light of applicant's amendment.

### ***Claim Objections***

3. Claim 9 is objected to because of the following informalities: a claim must be dependent from a previous claim, and cannot depend from a subsequent claim in the application. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-3, 5, 7, 8, 10, 13-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pantano et al. (US 2003/0054176) in view of Agrawal et al. (US 2003/0148401).

Regarding claims 1-3, 5, 18 and 19 Pantano et al. teach a porous substrate comprising: a nonporous support [0002]; and an inorganic porous region on a surface of the support [0025, 0026, 0053], the inorganic porous region having a surface capable of immobilizing probe molecules [0007], the inorganic porous region having a tint and

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exhibiting a reduced level of auto-fluorescence of at least about 50% relative to a comparable non-tinted porous substrate surface [0008], which encompasses the recited reduced auto-fluorescence values of at least about 15%, at least about 20-25%, and at least about 50%. The reduced relative auto-fluorescence level in RFU (less than 70 self fluorescent units) is at least an order of magnitude over the non-tinted porous substrate surface (relative self fluorescent units are relative fluorescent units; [0021]), and the reduction is over a wavelength range from about 470 and 700 nm (fluorescent dyes are FluorX, Cy3 and Cy5 which have an emission window between 470 nm and 700 nm, and is the same window over which the auto-fluorescence is reduced; Fig. 2 – excitation and emission data for fluorescent dyes; Fig. 3 – auto-fluorescence reduction over range; [0041, 0049]), which encompasses the recited ranges of 400 to about 720 or about 420 nm to about 700 nm. Pantano et al. fail to teach the tint comprising at least one of cobalt oxide or nickel oxide alone or in combination.

Agrawal et al. teach adding a dopant of nickel oxide to a substrate (par. 197), in order to provide coatings having strong interaction with nucleic acids.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the tinted substrate of Pantano et al, nickel oxide as taught by Agrawal et al., in order to provide effective control of the isoelectric point of the substrate which provides enhanced immobilization of biological materials (Agrawal, par. 139).

With respect to claims 7, 8, 10, 20 and 21, Pantano et al. teach a tinted porous region of borosilicate glass consisting essentially of the weight percentages of the following components: SiO<sub>2</sub>: 65-75 %, Al<sub>2</sub>O<sub>3</sub>: 0-3%, B<sub>2</sub>O<sub>3</sub>: 0-5%, K<sub>2</sub>O: 5-15%, MgO: 0-6%, CaO: 0-10%, SrO: 0%, BaO: 0.1-5%, Sb<sub>2</sub>O<sub>3</sub>: 0-2% [0053], all of which weight percentages fall within the recite ranges of claims 10 and 21. Agrawal et al. teach the tinted porous region

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having a colorant component including a transition metal ion in an amount of 1-50 weight %, which partially encompasses the recited range of 0.1-10 wt. % (Nickel; par. 197).

With respect to claim 13, Pantano et al. teach a tinted region having an average auto-fluorescence background for Cy3 and Cy5 channels [0041] of up to about 50% RFU of said un-tinted porous substrate [0008]. Claim 13 recites a GAPS-coating process, which fails to provide further product limitations on the product of claim 1, and is therefore not considered part of the product of claim 13.

Regarding claims 14-17 and 23, Pantano et al. teach a number of biological DNA probes attached at defined locations on or within the porous layer [0062], wherein the defined locations assume a microarray format of 10,000 probe droplets/cm<sup>2</sup> [0035], which encompasses the recited ranges of microspots of at least 1 and at least 10 microspots per cm<sup>2</sup>.

2. Claims 9, 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pantano et al. (US 2003/0054176) in view of Agrawal et al. (US 2003/0148401), as applied to claim 8, further in view of Mizuno et al. (US 2002/0042068).

Pantano et al. in view of Agrawal et al. teach a tinted porous region of borosilicate glass consisting essentially of the weight percentages recited in claim 9.

Mizuno et al. teach borosilicate glass [0087] comprising Fe<sub>2</sub>O<sub>3</sub> in a weight percent of 0.11% (table 1, column C), which is encompassed by the recited range of 0-10 wt. %, in order to provide to provide further reduced light absorption.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the substrate of Pantano et al. in view of Agrawal et al., Fe<sub>2</sub>O<sub>3</sub> in a weight percent of 0.11% as taught by Mizuno et al., in order an inexpensive glass made of fewer raw materials.

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3. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pantano et al. (US 2003/0054176) in view of Agrawal et al. (US 2003/0148401).

Pantano et al. in view of Agrawal et al. fail to specifically teach the recited pore sizes of the porous material. However, it has long been settled to be no more than routine experimentation for one of ordinary skill in the art to discover an optimum value for a result effective variable. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum of workable ranges by routine experimentation" Application of Aller, 220 F.2d 454, 456, 105 USPQ 233, 235-236 (C.C.P.A. 1955). "No invention is involved in discovering optimum ranges of a process by routine experimentation." Id. at 458, 105 USPQ at 236-237. The "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." Since applicant has not disclosed that the specific limitations recited in instant claims 24 and 25 are for any particular purpose or solve any stated problem, and the prior art teaches that pore size of a porous material may be varied in order to alter the surface area for immobilizing probes, absent unexpected results, it would have been obvious for one of ordinary skill to discover the optimum workable ranges of the methods disclosed by the prior art by normal optimization procedures known in the porous material art.

4. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pantano et al. (US 2003/0054176) in view of Agrawal et al. (US 2003/0148401) further in view of Young et al. (US 6,391,809).

Pantano et al. in view of Agrawal et al., as applied to claims 1 and 8, teach a borosilicate glass composition, but fail to teach the coefficient of thermal expansion.

Young et al. teach borosilicate glass having a coefficient of thermal expansion of  $30\text{--}40 \times 10^{-7}/^{\circ}\text{C}$ , in particular a borosilicate lamp glass being  $38 \times 10^{-7}/^{\circ}\text{C}$  (col. 1, lines 51-53), in

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order to provide a fusion-type seal with a low softening temperature while also maintaining a low to medium coefficient of thermal expansion.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the borosilicate glass composition as taught by Pantano et al. in view of Mizuno et al., a coefficient of thermal expansion of  $38 \times 10^{-7}/^{\circ}\text{C}$  as taught by Young et al., in order to match the coefficients of thermal expansion between a borosilicate non-porous glass substrate and the porous inorganic layer.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-3, 5 and 7-26 have been considered and have been withdrawn, but are moot in view of the new ground(s) of rejection. Upon further consideration, a new ground(s) of rejection is made in view of applicant's amendment requiring the tint to comprise cobalt oxide or nickel oxide alone or in combination.

### ***Conclusion***

6. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Yu whose telephone number is (571) 272-2933. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Melanie Yu  
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Art Unit 1641



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